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FORMALISED ACTION RESEARCH AS AN EMERGENT FORM OF TEACHER PROFESSIONAL DEVELOPMENT

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This paper discusses the place of action research in the professional development of teachers. It draws on an EU TEMPUS-funded project (see footnote) that looks to develop capacity in this domain and in aspects of teacher education involving partners from faculties of education in England, Sweden, Malta, Egypt, Lebanon and Palestine.

The theoretical underpinning of the paper is the classical application of action research in educational settings. This can be traced back to Dewey and Lewin's work in the 1930s on research in "natural settings" i.e. in this case, the classroom. Kemmis and McTaggart (2003) identify different orientations of the approach whereby classroom, or pedagogical, action research is seen as different from participatory action research and critical action research. In carrying out such research teachers and faculties of education need to work together to "elucidate, examine, explain and extend teachers' working knowledge" (Macintyre, 1980 cited in Pollard, 1984).

Brydon-Miller et al. (2003:13) see action research as rejecting "the notion of an objective, value-free approach to knowledge generation in favour of an explicitly political, socially engaged, and democratic practice." For the teacher, such research contexts are not free influences of the school, the community it serves, the education system and its politics (see Hammersley, 1993).

In England there has been a significant shift in policies around teacher education and development with control being moved much more towards the school. Somekh and Zeichner (2009) argue that the political, critical stance of action research is most prevalent at such times of step changes in policy. What remains clear throughout this changing landscape and different international contexts, however, is that action research is fundamentally concerned with enquiry into ways of improving practice (Elliott, 1991; McNiff, Whitehead, and Lomax, 1996; 2011; Sellwood and Twining, 2005). This may result in teachers improved self-efficacy and changes in self-perception of their professional identity as well as changes in their practice (Goodnough, 2011). Vaino et al (2013) have further shown that action research can change a teacher's beliefs and attitudes. Guskey (2000) on the other hand argues that such changes only occur when they are prompted by changes in student performance.

The findings are based on an analysis of international case studies and on views of action research as represented in the project partners' baseline reports and on its application in two schools in England. It illustrates that while action research remains a contested notion it is one that has some core tenets at its heart – that of a practitioner systematically enquiring into his or her own practice through a series of interventions, which lead to the classic 'spiral' of action research (Lewin 1946; Elliott 1991; Dick 2002; McNiff & Whitehead, 2005; Carr, 2006; Lendahls Rosendahl and Rönnerman, 2006). This, in turn, can then be used by individual teachers, schools and/or faculties of education as a vehicle for teachers' professional development.

The implications of the paper are for ways in which the increasingly prevalent practices of action research by teachers can be linked with that undertaken by faculties of education. A further challenge is the alignment of the research practice of the classroom with the demands of formal qualifications.

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1. Introduction

This paper looks at the relationship between action research and professional development of teachers and how the former is becoming formalised as an approach for the latter. The term "action research" is contested, however, as the review of the literature below exemplifies. In this paper it is generally taken to include any form of research undertaken by practitioners (in this case, teachers) with a view to enquiring into their professional practice, learning from the findings and making subsequent changes to that practice. While that may be better described as "practitioner research" or "practitioner enquiry" (see Sellwood and Twining, 2005), the term "action research" is used here to be congruent with the terminology of the originating EU-funded project.

In this project, faculties of education in Europe and the Middle East/North Africa (MENA) region are exploring approaches of working with schools in the three domains of practicum (i.e. pre-service teaching practice), professional development and "action research". The paper draws on the experiences and practices of the partner faculties and sets these against a theoretical framework for action research in the context of professional development.

Case studies of action research are reviewed in respect of their relevance to teachers taking ownership of their professional development and two vignettes from schools visited as part of the project are presented to show how action research is being used as a systematic approach to professional development at a school level.

2. Literature review

The idea of using research in a "natural" setting to change the way that the researcher interacts with that setting can be traced back to Dewey, and Lewin in the 1930s. McFarland & Stansell (1993:14) state that "Lewin is credited with coining the term 'action research' to describe work that did not separate the investigation from the action needed to solve the problem" (see also Reason & Bradbury, 2004). Thus the results of action research are intended to be applied to the research context. This is in contrast to traditional scientific research which aims not to affect it but to merely research into it.

Kemmis and McTaggart (2003:560) identify a "family of action research" in which different orientations of the approach are analysed. These include three which are particularly relevant to this paper and which may be summarised as:

- Participatory action research: in which the actors and objects of the research are involved together in an emancipatory frame. Thus for education this would involve members of university education faculties, teachers and other stakeholders (including students) taking an active part in the research and actions.

- Critical action research in which elements of critical theory and action research are combined. Here a commitment to social change, or to the power structures inherent in education systems, is implicit in the research objectives.
- Classroom action research, or pedagogical action research (see Norton, 2009) in which teachers carry out reflective enquiry to improve their practice and, by extension, the performance of their students

(ibid.)

Inherent in this taxonomy is the concept of collaboration in action research and the importance of the relationship between teachers, and others including university staff, as they carry out their research. Here are echoes of Macintyre's call of over thirty years ago for researchers and teachers to work together to "elucidate, examine, explain and extend teachers' working knowledge" (Macintyre, 1980 cited in Pollard, 1984).

Brydon-Miller et al. (2003) trace the many different origins of action research. At its heart, they claim, is the rejection of "the notion of an objective, value-free approach to knowledge generation in favour of an explicitly political, socially engaged, and democratic practice." (op.cit.:13). Through this the researcher is at the centre of the practice and in control of the way in which research into it is undertaken. Pure action research in this sense overthrows the shackles of context and allows the researcher, in our context the teacher or teacher educator, to gain understanding of the situation they are working in. Of course, such contexts are not free from influence beyond the teacher – the school, the community it serves, the education system and its politics all act on the context and practice and thus skew and constrain the research (see Hammersley, 1993).

Somekh and Zeichner (2009) argue that this political, critical stance of action research is most prevalent at times of step changes in policy, often brought about by governmental changes. Citing examples from Namibia, South Africa, Russia and post-Franco Spain they explain action research's place in determining new ways of being for educationalists borne out of a fundamental review of practice and its purposes. This is allied to the use of action research not just for professional development but for educational reform which may be derived from responses to governmental diktat or through collaborative action with higher education in partnership with schools (ibid.).

What is clear, however, is that action research is fundamentally concerned with enquiry into ways of improving practice (Elliott, 1991; Sellwood and Twining, 2005). Improvement may of course be subjective. The aim of the research is to modify the very practice that is the object of the research. Whereas classic research may be classified as seeking new knowledge – finding out what is happening - the aim of action research is to apply that knowledge to practice to answer the question "How can I improve what is happening here?" (McNiff, Whitehead, and Lomax 1996). A further issue, that is pertinent here, is that emphasised by members of the self-study of teacher and education practice (S-STEP) group who have moved away from action research claiming that research, and the theory it generates, is not always needed to reflect on practice and improve it (McNiff and Whitehead, 2011).

Having been modified, through reflection and evaluation based on the findings, the context provides opportunity for further iterative research. This leads to the classic conceptualisation of action research as a cycle or spiral (Lewin 1946; Elliott 1991; Dick 2002; McNiff & Whitehead, 2005; Carr, 2006; Lendahls Rosendahl and Rönnerman, 2006). Kemmis & McTaggart (1988) conceptualise action

research as a deliberate, solution-oriented investigation characterized by such spirals or cycles of problem identification, systematic data collection, reflection, analysis, data-driven action taken, and, finally, problem redefinition. For them it crucially aims at creating change, either individually or institutionally. This individual change may result in teachers improved self-efficacy and changes in self-perception of their professional identity as well as changes in their practice (Goodnough, 2011).

The number of stages in the cycle may vary but can be generally, and simplistically, summarised as Plan...Do...Review. In reality the research will probably start more formally at the review stage where issues are identified that lead to an enquiry. Based on this, new practice is planned (e.g. the teaching of a particular topic in particular way) and this is then reviewed to inform the first cycle of action research. Sellwood and Twining (2005:4) identify a number of sources of evidence that the teacher-as-researcher (Stenhouse, 1975) can use to inform this review.

- Notes and Diary (staff and pupil)
- Lesson plans
- Classroom materials
- Students' work
- Observation
- Photography, Audio-taping, Video-taping
- Focus Group
- Interviews (staff and pupil)
- Questionnaires (attitude, opinions)

It is notable that many of these artefacts and sources are generated in the normal course of practice. For example lesson plans and students' work will exist whether or not the activity is being researched. This sets action research into the naturalistic sphere of research (Tomal, 2010), which in turn points to its limitations. It cannot lead to findings that are generalisable and which can normally only be applied to the situation or very similar situations in which the action research was undertaken (Sellwood and Twining, 2005). On the other hand merely reflecting on practice does not constitute action research which needs to have intention and structure (Cochran-Smith and Lytle, 1999).

Sellwood and Twining (ibid.), building on Zeichner (1994) argue that action research in educational institutions can involve a number of activities which are categorised with different labels. These include:

- case studies based on a school, class or pupil/s
- school-based case study
- practitioner enquiry
- reflective practice
- evaluation
- professional development

They identify potential purposes of such activity as including institutional improvement or institutional change (ibid.; Day, 2000). Key here is that those who are undertaking the research are practitioners i.e. teachers or school leaders and that such research, however it is framed, always

includes reflection on their practice (Schön, 1984; Eraut, 1994). For Pring (2004), reflection on practice acts as the catalyst to action research and forms the 'review' phase of the cycle of iterations. The research then enriches and supports teachers' reflection (ibid.).

While action research may include these other activities, Sellwood and Twining categorise its distinctive nature in that it is informed by literature and by the shared professional knowledge base that exists in communities that span beyond the individual teacher, classroom or institution (see also Bradshaw et al., 2012). Its key objective is to improve practice, the practice of the researcher-practitioner. In doing so the professional knowledge base is enhanced and new insights and understandings are brought to bear, but this is not the crucial objective of the research (Elliott, 1991).

Such practice may be that of an individual, a group (e.g. a department) or a whole institution and may often be indistinguishable from professional development, forming a valuable part of it (Sellwood and Twining, op.cit.). The impact of the research will fundamentally be on the context in which it was carried out (e.g. the practice of the teacher-researcher in their classroom) but through making the findings of the research public, this impact can permeate into the surrounding contexts. Indeed Pring (2004) argues that this publication of findings is an essential part of action research given its intention to change practice. There is a tension here with the lack of generalisability noted above for, if this is the case, the research findings cannot easily be transferred to other contexts.

Clarke and Hollingsworth (2002) conceptualise these levels of impact in terms of four domains: the personal domain, the domain of practice, the domain of consequences, and the external domain. Here the personal domain includes the intrinsic beliefs and attitudes of the teacher as well as their knowledge and skills. While beliefs are deep-rooted, Vaino et al (2013) have shown that action research can change a teacher's beliefs and attitudes. Guskey (2000) on the other hand argues that such changes only occur when they are prompted by changes in student performance. For him neither does professional development necessarily lead to a change in practice for it is often mired in policy and other constraints. Action research, on the other hand, coming from the personal domain and motivations of the teacher is more likely to bring about such changes (Clarke and Hollingsworth, op.cit.). This is even more likely when one considers the relationship of action research to teacher leadership. The literature review of Muijs and Harris (2003) places action research centrally in the toolkit of roles and behaviours of effective leaders, whether they be formally designated leaders or adopting leadership roles.

Orland-Barak and Becher (2011) see action research similarly as having different facets. In the context of their work in teacher education, they identify three major orientations in action research:

- a practical–professional orientation
- a critical–professional orientation
- a personal–professional orientation.

The first orientation is seen as a platform to assist teachers to understand their practice and usually to change it in line with particular policy or institutional requirements. This is the pragmatic setting for action research which also carries a danger of bias or skewing as the initial driver for the research

may not come from the practice of the teacher-researcher themselves. Hammersley (1993) associates this with the control exerted by the hierarchical nature of schools.

The pragmatic approach is balanced by the potential for theorising in the action research with the aim of changing pedagogic practice. This takes practitioners beyond the mere description record of their understanding to a deeper framework (Carr and Kemmis, 1986).

The second orientation more closely corresponds with the action research described in Brydon-Miller et al. (2003). Criticality here needs to be seen as having an object. Teacher researchers may initially apply a critique to their context but this orientation assumes something much deeper. Here action researchers are seen to be critical towards the research itself and to the extant literature.

The third orientation to action research 'attends to the insights gained by the researcher as she or he engages in a critically reflective process before, during, and after a situation that she or he is facilitating and inquiring into' (Orland-Barak and Becher, op.cit.:120). This research typically assumes a cyclical design involving recurring cycles of reflection on action that involve the researcher in "interpolating and extrapolating, judgment-making and assuming, doubting and affirming" (Peshkin, 2000:5). Here is seen most clearly the link between reflection, action and research described at the start of this review. It is, perhaps, the classic view of action research. In teacher education, however, Orland-Barak and Becher (op.cit.) argue that all three orientations are in play together. This approach also suggests that all actors (education faculty researchers and teacher-researchers) need to participate in the cycles of planning, acting, observing and reflecting on our staff and teacher-students' teaching practices (Schön, 1983; Carr & Kemmis, 1983; Elliot, 1991; LaBoskey, 1994; McNiff et al., 2003).

Through teachers engaging in research as practitioners the divide between research and teaching is blurred, if not completely removed. This should overcome some of the issues suggested by Hammersley (1993) who highlights the dangers in research being an activity that is done on teachers rather than by them and which is in the domain of either academics or the educational system as a whole. Pine (2008) underlines this view and identifies the gap between teaching and research partly due to teachers perceiving the research as being detached from their realities but crucially because they are not actively involved in it. Through becoming participants in action research, driven by their own or institutional needs, he argues that teachers and teacher educators can become, and are becoming, agents of educational change.

3. Practices of action research from the literature

The ways in which teachers undertake practitioner enquiries and/or adopt action research approaches is well represented in the literature of applied research. Very many case studies can be found and a number are presented here. The selection of case studies for inclusion here is necessarily partial for the literature contains many dozens of similar reports. Two criteria were loosely applied in the selection – recentness and distinctiveness. Thus the majority of studies have been undertaken, or at least published, in the last five years and each presents a different facet of the implications and practice of practitioner research by teachers.

Soprano and Yang (2012) undertook a study of a pre-service teacher's use of action research in the domain of inquiry-based science teaching in Taiwan. Through undertaking an action research project, the pre-service teacher's understanding of inquiry-based science teaching and learning were

developed and enhanced through the planning and teaching phases of school experience for teaching practice. Concomitantly the teacher's self-efficacy improved as did her self-confidence in teaching science.

Also in Taiwan Chen (2012) used a teacher-researcher approach to action research, the writer investigates his own practice in the design and delivery of a course in English as a foreign language. In doing so he considered four aspects – the nature of being a teacher in this context, the professional knowledge of the subject, methods of collaborative and reflective teaching and the specific context of Taiwan. The study reports a higher level of reflection on the part of the students.

In a New Zealand collaboration between a teacher in school and members of university faculty members, with data elicited from working with early career teachers, Williams et al. (2012) explored the ways in which 'content representation' could be used as a mediational tool to develop early career secondary teacher pedagogical content knowledge. They found that the teachers were willing to be involved as part of the research team and, thus, to explore the use of the tool. The layering on of research to the normal planning of teaching meant that there was a need for extra time and 'space' to do this (see also Hume and Berry, 2010 for a similar Australian study, Eilks and Markic, 2011, for one set in Germany and Guzey and Roehrig, 2009 for one set in the USA).

Wyatt and Arnold (2012) report on the use of an action research approach by a senior teacher in Oman to explore school-based mentoring of other teachers using tools of post-lesson discussions and video to assist recall.

Sales et al (2011) provide a case study from Spain that explores the role of action research strategy in a school-based in-service training programme that responded to the demand by the teaching staff of a primary school. They found changes in teachers' perspectives through their engagement in action research: they challenged the premises of deficit theory, and questioned the way they categorised pupils and their families and their own role as teachers. They debated the function of their school, the power relations within it, and the ways of communicating and delegating responsibilities. They also found changes in the schools culture: The organisational problems in the school were explored through collaboration and dialogue. A plurality of voices was heard and acknowledged, and the idea of the school as a community arose with teachers seeing themselves as becoming valuable contributors to the decision-making processes in school.

Jaipal and Figg (2011) report on a study of collaborative work between faculty and novice teacher researchers organised into action research teams in Canada. Analysis of the teams as they conducted action research resulted in the identification of three collaborative action research approaches to promote professional development: Classroom practice within one school, classroom practice within multiple schools and school-wide issues within one school. The findings showed that collaborative engagement of teachers in these approaches was influenced by three factors – time to engage and collaborate, workload, and group dynamics – and that these factors were enacted in the three approaches in different ways.

Halai (2011) considers how teachers become action researchers in the context of the Ministry of Education of Pakistan's policy to reconceptualize teachers as researchers. The study synthesised 20 action research theses by MEd students and found that teachers find action research to be both complex and messy due their dual roles of teacher and researcher. The 'teacher' was concerned with

syllabus completion and examination performance. The 'researcher' was concerned with creating valid knowledge about the school and bringing about change. The study concluded that string support is needed especially in developing capabilities for reflection and observation. It recommended the need to educate teacher educators in action research approaches and to include it in the teacher education curriculum.

Ono and Ferreira (2010), working in South Africa, consider the professional development of in-service teachers with a view to using 'Japanese lesson study', a form of pedagogical action research, as an approach. It was proposed that such an approach could be used to change the way in which professional development was conceived in the case study district. This form of action research was not readily adopted by teachers, however, and this was deemed to be due to it not being embedded in policy and practice. In addition it was argued that time is needed for such an approach during normal working hours and not as an extra. Finally the need for teachers to share best practice regionally and provincially was recognised.

Tsafos (2010) deals with the use of action research in a Greek postgraduate teacher education programme, which is considered through the lens of bringing together theory and practice. In doing so it develops a model of pre-service teachers becoming themselves reflective practitioners and researchers. It reports on the challenges of developing a focus on pre-service teachers becoming active participants in these other roles which are beyond the act of teaching. The need for supportive mentoring is also foregrounded.

In a longitudinal case study of international teachers' perceptions of teacher-research, Reis-Jorge (2007) sought to find teachers' views of teacher-research following instruction and immersion in research and reflective practice approaches. The results of the study confirm previous assumptions that the highly-structured nature of the academic format of doing and reporting research may fall short of providing teachers with skills and tools for reflection that are easily transferable to their practice.

4. Practices reported by the partner universities

We now turn to the data collected in preparation of this paper. Firstly the baseline reports from the partner universities are considered and then two vignettes of schools visited as part of the project are presented.

As part of the baseline reporting for the TEMPUS-funded project that stimulated this research, the 14 partner institutions reported on the role that practitioner enquiry and action research plays in their work with teachers and schools. A range of activity was reported, and those relating to work by teachers are summarised here:

- action research as a subject of theoretical study (eg. in master's or taught doctoral programmes);
- small-scale practitioner research undertaken by teachers as part of master's-level study;
- practitioner enquiry, sometimes with an action research approach, undertaken by teachers as part of doctoral study;
- practitioner enquiry, sometimes with an action research approach, undertaken by pre-service teachers as part of programmes, and focusing on the practicum aspects, of initial teacher education;

- practitioner enquiry undertaken by teachers as part of programmes of professional development led, or facilitated by, universities;
- practitioner enquiry, sometimes with an action research approach, undertaken by academics and teachers working together on research and development activities.

Where practitioner enquiry is undertaken universities report a number of ways in which findings may be reported by the teachers undertaking it:

- in a portfolio of professional activity, which may or not be formally assessed;
- in formally assessed assignments;
- in seminars or conferences (including online events);
- in project reports;
- in in-house publications;
- in academic journals.

The benefits reported for teachers undertaking practitioner enquiry, or action research approaches included:

- such research seeks to improve the educational level of students;
- improved understanding of theoretical and practical teaching activity – teachers reflecting in depth on action;
- enhanced teaching materials, policies or resources;
- development of teachers' capability and capacity for individual and institutional transformation, as research informs their practice as change agents;
- deepening understanding of professional development through immersion in enquiry into one's own professional context;
- enhanced peer support and collaboration among teachers (e.g. through the establishment of research clusters);
- increased self-efficacy of teachers (see also Goodnough, 2011) and improved perceptions of them by school leaders;
- greater sustainability and empowerment of teachers through their active engagement in enquiry.;
- improved understanding and subsequent enhancement of socio-educational context of schools in relation to community;
- such research impacts positively on the professional identity of both the individual teacher and peer groups – teachers being seen as researchers;
- empowerment of teachers in their own professional development;
- constructive partnership and synergy between faculties of education and schools.
- ownership by teachers in school reforms;
- skills development in teachers.

A number of issues were reported by the universities:

- difficulty of carrying out cycles of research as part of an action research approach;

- difficulties for teachers in networking with other research-active teachers beyond their own school;
- research may be carried out for the purposes of a programme or assignment rather than for the authentic needs of the teacher, and the findings from the research may not be properly embedded in practice;
- in some contexts, the predominant research approach is for university staff to research into teachers' practice rather than practitioner self-enquiry;
- difficulty of publishing empirical or action research findings in some contexts (e.g. in the Middle East, it is reported that journals are not pre-disposed towards the action research approach);
- ethical issues – both the need to have robust systems in place and the need for schools and teachers to fully understand the ethical implications of research;
- difficulties with upholding anonymity and confidentiality in tightly defined contexts;
- assessment systems do not always require practitioner research (e.g. in some contexts examinations or theoretical enquiries are preferred);
- lack of expertise in schools in action research methodologies;
- lack of opportunities for research training for school teachers;
- lack of close collaboration between researchers in universities and school teachers.

5. Vignettes of two schools in England

As part of the research being undertaken by the authors in looking at the relationship between action research and professional development a number of schools have been visited to explore the extent to which this relationship is being exploited in a systematic way. Fuller analysis will be the subject of later papers and, in this instance, two vignettes are presented here to give a flavour of the ways in which some schools are approaching this.

Professional Development and action research at a inner city secondary school, London

This school, near the centre of London, has nearly 1200 students aged between 11-18. It serves a very mixed area in terms of cultures, languages and ethnicities and was founded under the government's 'academy' scheme replacing a previous school on the same site. As part of this scheme the school was rebuilt and has gone from being one which was underperforming to one of the highest performing schools in the country, being in the top quintile in mathematics, English and science when compared to similar schools.

It is part of an 'academy chain' a network of schools that share elements of management and other services. A particular feature of this chain, the largest in England, is its national spread and that it contains schools covering both primary and secondary in urban and rural settings. Equally significant, especially for the purposes of this vignette is the way in which action research is embedded in processes of teacher professional development.

The academy chain conceptualises professional development in four phases – pre-service, two initial in-service and action research. The pre-service phase is for trainee teachers whose professional formation is undertaken in the school, with a placement in a contrasting school in the chain. This is carried out with support from a university reflecting the current model of initial teacher education in England. On qualifying as a teacher many trainees are employed in schools in the chain. In this case

they join the second phase of professional development, which acts as an induction year. This is also followed by teachers who come to the school (or chain) from other posts. Newly qualified teachers also take the third phase of professional development, which looks at developing their professional identity and capabilities. This phase is not followed by teachers who have experience elsewhere.

The fourth phase is aimed at teachers with at least two years of experience, and who have completed the one or two years of post-qualifying PD outlined above. It takes the form of practitioner action-research with teachers undertaking enquiry to aspects of their teaching or of the school more widely depending on role. This phase is led by a named teacher, who also has subject leader responsibility, and is organised in clusters to provide peer support. These clusters meet every half term approximately to share plans, approaches and emergent findings. Issues of ethics are covered through school policies on informed consent of parents and students.

Outputs from the enquiry are shared amongst colleagues in the school and across the chain at professional development events and may be published in the chain's PD publication or at other dissemination events. The enquiries may be single cycle practitioner enquiry or iterative, in the more commonly accepted definition of action research. Teachers may use this experience and enquiries to work towards a Master's degree but this is not essential.

Peer observation action research at a Primary School

This school is newly established and situated in Milton Keynes. It services mixed races but mostly highly skilled immigrants' children. This is a growing school and believes that action research enables them to find the best way to accelerate pupil progress. They also see it as part of their professional development. They term their research as 'peer observation action research'.

How they use action research in their school?

They use teams of three practitioners (teachers) to carry out a specific project. This allows them for quality learning dialogue, team support and the sharing of ideas and experience. To do this, they use a form called 'Record of Research' to keep record of their action research project.

After identifying problem, they come up with a hypothesis that using theory based strategies to support the teaching and writing will result in improved pupil progress. To verify this hypothesis they follow the above action research cycle during 6 weeks of their exploration:

Stage-1: Identify a learner for the action research

At first, teacher identify a learner in his/her class who has not made progress in last term or not making the progress that the learner should apart from SEN students.

Stage-2: Identify the theory and strategies

Teacher meets with his/her team and then shares and discusses about the learner i.e. who he/she is, what are the needs and how that could be met. Then they use which they term as 'theory meets

practice research sheet' to identify which theory might be helpful to use for making things easier for the learner who is under exploration and why. Then they identify the strategies which will help to support their learner.

Stage-3: Plan the process of data collection

As a result of planning the strategies to be adopted in their practice and investigation, teacher must decide how he or she is going to observe the planned changes and measure the impact. For triangulation of the generated data, he or she might use the following methods/techniques:

Observation notes
Involvement scales
Well-being scales
Video recording
Interview with learners
Environment review

Each teacher (researcher) of the team should have understanding of the data collection methods, when their classroom environment will be visited, and how the data will be collected. A detailed time table should be drawn and shared amongst the team members.

Stage-4: Data collection

Each researcher visit other's classrooms to collect their data. They will do it by using their PE slot and they will complete all documentation during that time slot.

Stage-5: Measure and review the impact

After collecting data, teachers start to triangulate what has been observed. They use learner progress data as part of their review process. Then finally they answer the hypothesis and consider their recommendations or identify questions for further exploration.

This action research focuses on specific individual students to improve their performance. This school is very eager to explore opportunities to carryout action research towards an OU qualification if possible.

6. Discussion of findings

The evidence collected for this report comes from four sources – the review of the literature case studies, the case studies of practice in teacher education's use of action research, the TEMPUS-funded project's baseline reports and the vignettes. From these the nature of action research in the professional development of teachers may be discerned and discussed.

Action research does not yield to a single definition. In the literature review a number of different orientations and approaches are reported. In the baseline reports a similar heterogeneity of understandings is also evident. In writing about action research practices in their own institutional context some partners focused on aspects in which members of faculty were conducting research into their own practice of teacher education, others focused on teachers-as-researchers in both

formal courses and in as part of their professional development activities. Yet others considered any empirical research in the domain of teacher education to be action research for example when faculty research into aspects of teacher practicum. In this latter case there is little evidence of reflecting back on the researchers' own actions and practice. Rather the focus of the research is on an empirical enquiry by faculty researchers into some aspect of teacher practice or professional development.

In many of the activities reported by partners there is little scope to support the cyclical nature of action research. Where teachers are engaged in research as part of taught master's courses the time constraints and assessment demands of those courses render difficult more than one iteration of reflection, planning, doing and reviewing.

Discounting empirical research that is not reflexive on the researchers' own practice, action research in teacher education as seen in the baseline reports and case studies may be categorised in three ways. Firstly there is the action research conducted by academic members of faculties of education, secondly that by teachers (and pre-service teachers) in schools and thirdly the collaborative research in teams involving both parties (and perhaps other organisations such as educational authorities). For each of these the 'practice' on which reflection and subsequent action is directed is different. The table shows these differing loci of research impact.

Type of action research, characterised by the role of the researchers	Practice i.e. locus of research impact
1. Research conducted by academic faculty	Design of, and teaching on, teacher education courses and professional development. Associated resources, policies and approaches.
2. Research conducted by school teachers (or pre-service teachers in school)	Design of, and teaching on, school courses. Associated resources, policies and approaches. School-based teacher education (teaching practice, school experience).
3. Research conducted by academic faculty and school teachers in collaboration.	Both of the above but with a focus back on the collaborative design and delivery of teacher education, both formal and informal.

Each of these will now be considered in turn in the light of the literature with best practice being drawn from the case studies and baseline reports.

This paper is concerned with the way in which action research approaches or practitioner enquiry may be seen to part of teachers' professional development. This it is the second row of the table (research conducted by school teachers) that is germane. Where research is carried out by pre- or in-service teachers it can be called action research when it involves elements of reflecting on the

practice of the teachers themselves (Elliott, 1991; Sellwood and Twining, 2005). Such research may be focused on the classroom as pedagogical action research (Kemmis and McTaggart, 2003; Reason, 2009) or it may have a broader focus such as the school or wider community (taking Sellwood and Twining's taxonomy of 'levels'). It could be termed critical research (Kemmis and McTaggart, op.cit.; Somekh and Zeichner, 2009) if it was orientated towards making the voice of the teacher-researcher or their pupils heard.

In the case of the two vignettes introduced in this paper, School A has embedded action research into its professional development system. All teachers, once inducted into the school (after one or two years) are expected to carry out small scale enquiry into their own practice. This is done in conjunction with peers and reported within the school, and the chain to which it belongs. An in-house journal provides a vehicle for this dissemination. In the case of school B, the approach is universally applied to all teachers irrespective of length of service. In both cases classroom enquiry, and by extension action research approaches, are an integral part of teachers' professional development. So much so that it could be argued that it is not seen as such but is merely part of the everyday work of the teacher.

Universities report many examples of this type of research in taught programmes and in special projects. Its use as a systematic part of ongoing professional development is less often seen by universities. While teachers carrying out research as part of their master's or initial teacher education meets the criteria to be regarded as action research in respect of the reflecting on practice and planning, doing and reviewing (Elliott, 1991; McNiff, Whitehead, and Lomax 1996; Sellwood and Twining, 2005) there may be insufficient time to carry out more than one iteration as implied by the spiral nature of action research (Lewin 1946; Elliott 1991; Dick 2002; McNiff & Whitehead, 2005; Carr, 2006; Lendahls Rosendahl and Rönnerman, 2006). Of course this may be an issue of the lack of visibility of further iterations to the faculty. Once a student had completed his or her piece of research for the master's programme, for example, they may well continue with it without the university knowing.

Examples in the case studies of this type of research include Soprano and Yang (2012)'s report of inquiry-based pre-service science teaching; Chen's (2012) work in TEFL; Wyatt and Arnold's (2012) study of mentoring; Halai's (2011) study of teachers as researchers and Ono and Ferreira's (2010) enquiry into the uses of lesson study. It is difficult to interpret some of these case studies to be sure that they are teachers alone doing the research as in most cases (Chen is an exception) the papers are written by or with faculty members. This could be viewed as a two-stage research model – the action research of the teacher followed by the case study written up by a university academic.

Additionally there are examples of research conducted by academic faculty and school teachers in collaboration (type 3) that may be considered as part of teachers' professional development. McNiff and Whitehead (2005) dismiss the need for a category of action research called 'collaborative' as they assert that all action research is in some way collaborative. Under consideration here though is where the research is reported as explicitly being collaboration between school and university staff. A further blurring may be caused by the joint authoring of papers by a doctoral student and his or her supervisor. Here the joint effort is presumably only in the writing and dissemination for the research must be the student's own work to satisfy the requirements of the assessment process.

7. Conclusion

Traditionally teachers' professional development was manifest through attendance at courses or through in-service training in schools. In this paper the ways in which teachers' own actions, ranging from small-scale classroom enquiry to doctoral research, are becoming a more prevalent vehicle for their development have been considered. Such a move complements the pursuit of formal qualifications at Master's level or above, which require a study and use of research methods.

Schools are making opportunities for such enquiry and research part of the formalised professional development 'menu' for teachers and examples are seen where this is systematically applied and used as a means of developing the whole school. Findings from the research are impacting on the teacher's own development, the learning and performance of students and the school as a whole. In using this approach teachers are empowered to take responsibility for their own development and to frame enquiries that meet their own professional needs, that of the department or year group in which they work and the school more widely.

The TEMPUS-funded project is concerned with implications for faculties of education and their links with schools and it would seem imperative that there needs to be a blurring of the lines between the ways in which universities work with schools and teachers for formal taught programmes and the ways in which they support them in professional development. Similarly university faculties of education need to develop methods of capturing and collating the findings of teachers so that they may be synthesised and fed back into the profession at a level beyond the school or the teacher. The risk of not doing so is that lessons learnt become lost in the multitude of individual classrooms. On the other hand it can be seen that to truly learn from the action research one needs to enact it oneself.

8. References

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